















Status of Applications Division Cooperative Agreements as of June 9, 2003

Partner	Agreement Description	NASA POC	Partner POC	Status
Completed Agreements				
	MOU to benchmark methods for incorporating NASA ESE data into NREL decision making tools – renewable energy.	Jack Collier	Bobi Garrett	Complete
	MOU to facilitate S&T research, development, transfer, utilization and commercialization in Earth remote sensing.	Ed Sheffner	Rod Brown	Complete
Projected Agreements				
	"Strategic Partnership" Agreement covering Hazmus.	Steve Ambrose	Claire Drury/ Ed Latcher	Draft Received to YO/Meister (6/2)
	Amendment of existing EPA-NOAA MOA to include NASA. MOA covers air quality forecasting.	Lawrence Friedl	EPA - Jim Szykman	Meister/Freidl coordinating development of supporting documentation; gathering defining info from centers re: NASA responsibilities (5/11)

	MOA for collaboration on technology evaluation, applications research, and information for coastal resource management applications	Lawrence Friedl		Meister/Freidl developing cooperative strategies (5/11)
	MOU on technology for environmental public health surveillance	Bob Venezia	Judith Qualters	Draft language received from CDC – under review by YO (5/9)
		Ed Sheffner		
	NASA/FAA Agreement in place, not necessarily specific to Code YO, but sufficient for now.	Steve Hipkind		Present Agreement suffices.
	Resolution on Establishing cooperation strengthening the education and training capacity for geospatial workforce technology	Peter Meister	Chuck Chaitovitz	Under review in Code N 5/20
	Water		Jared Entin	
	Statement of Cooperation to build geospatial technology workforce	Peter Meister		Awaiting response from Chaitovitz re: elevation to Administrator level (5/12)
	TBD	TBD	TBD	TBD

International Agreements

	Agreement to optimize the use of Earth monitoring capabilities for sustainable environmental management.		João de Queiroz	????????????
	MOU on remote sensing monitoring of World Heritage Sites	Alex Tuyahov, Liz Williams	Robert Missotten	Under review by UNESCO General Counsel 4/15

MEMORANDUM OF UNDERSTANDING

Between

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Office of Earth Science, Applications Division
and

THE NATIONAL RENEWABLE ENERGY LABORATORY DIVISION
of the Midwest Research Institute
A National Laboratory of
The United States Department of Energy

I. Purpose and Scope

- A. This Memorandum of Understanding (MOU) provides a general framework for cooperation between the National Aeronautics and Space Administration (NASA), Office of Earth Science Applications Division and the National Renewable Energy Laboratory (NREL) Division of the Midwest Research Institute, a National Laboratory of the United States Department of Energy (DOE).
- B. The purpose of this MOU is to apply NASA's extensive Earth science data and model products to NREL's efforts to enhance the nation's ability to expand the use of renewable energy technologies in a number of end-use applications. This MOU seeks to benchmark methods for incorporating NASA enabled Earth science data products into NREL decision-making tools that support the planning and managing of renewable energy solutions.
- C. Addressing energy planning and management is of critical concern to the health and vitality of a growing economy. NREL as a national laboratory of DOE's Office of Energy Efficiency and Renewable Energy has a key responsibility for developing decision-making tools that assist in the worldwide application of renewable energy technologies (solar, wind, small-scale hydroelectric, and biomass). Among these tools are procedures for (1) determining the distribution in space and time of the renewable energy resources available to these technologies and (2) the infrastructure available or required to access the renewable energy resources to meet energy load requirements.
- D. NASA's Office of Earth Science Applications Division provides systems engineering solutions that employ research that is focused on improving the understanding of Earth-atmosphere processes through advances in satellite remote sensing and analysis techniques. Recent and planned NASA Earth observation satellite missions (i.e., QuikScat, Terra, Aqua, Calypso, CloudSat, GIFTS, etc.) will improve global data records of winds, clouds, aerosols, solar energy, temperature, and

humidity. The measurements of the Earth derived from these missions will provide for improved assimilation and prediction of key quantities in atmospheric models. NASA has sponsored the production of historical meteorological parameters from previous analyses to support renewable energy applications worldwide. Research and data from the new planned NASA missions will improve meteorological and climatological data sets and provide a mechanism for the prediction of meteorological parameters directly relevant to renewable energy technologies.

II. Authorities

- A. NASA enters into this MOU pursuant to section 203(c) of the National Aeronautics and Space Act of 1958, as amended 42 USC 2473 (c).
- B. NREL, acting on behalf of DOE, enters into this MOU within the statutory guidelines of the Department of Energy Organizing Act 42 USC 710 (c)
- C. Nothing in this MOU alters the statutory authorities of NASA or DOE. This MOU is intended to facilitate cooperative services, support, and technical assistance between both departments in the conduct of science and technology research, development, transfer utilization, and commercialization programs and activities. This MOU does not supersede or void existing MOUs or agreements between NASA and DOE or NASA and NREL.

III. Role of the Parties

- A. NASA intends to:

Provide NASA-derived Earth observations data and models for developing decision-making tools that assist in the worldwide application of renewable energy technologies (solar, wind, small-scale hydroelectric, and biomass), including past, current and future mission data.

- B. NREL intends to:

Provide NREL technical expertise for performance, planning review, or consultation in areas of mutual interest.

Pursue the collaborative application of NASA data and scientific models at NREL to identify specific decision support processes, assessments, and systems that require predictions and observations that may be provided by NASA Earth science and remote sensing systems, including but not limited to the following:

1. Identify performance expectations/requirements for NASA inputs to renewable energy decision support processes.
2. Collaborate with NASA on the evaluation, verification and validation of results for component solutions.
3. Benchmark with NASA to establish quantifiable improvements in system performance.

C. It is intended that NASA and NREL will jointly:

1. Collaborate with the goal to improve the efficiency and cost-effectiveness of renewable energy technology applications in a number of ways:
 - accelerate time-line to project development;
 - improve data bases required for project design;
 - optimize energy system operations - particularly in grid-connected applications - through forecast data products;
 - quantify seasonal, interannual, and decadal variations in renewable energy resources;
 - enhance understanding of the environmental benefits of and barriers to the widespread use of renewable energy technologies; and
 - provide opportunities to further support other DOE energy efficiency and renewable programs such as buildings and distributed energy resources.
2. Support the exchange of technical information - through databases, information systems, clearinghouses, conferences and other means - on research, development, demonstration, and technology transfer opportunities.
3. Encourage through education and outreach, in partnership with both public and private organizations, the public awareness and access to space-based advances in renewable energy technology.

IV. Principal points of contact

The principle points of contact with responsibility for implementing this MOU are listed below:

For NASA:	Dr. Paul Stackhouse Earth Science Enterprise National Aeronautics and Space Administration
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NASA/Langley Research Center
21 Langley Boulevard, Mail Stop 420
Hampton, VA 23681-2199

For NREL

Dr. David Renné Energy and Environmental Analysis

National Renewable Energy Laboratory
1617 Cole Boulevard, Mail Stop 1612
Golden, Colorado 80401
(303) 275-4648

V. Future collaborations


- A. All activities under or pursuant to this MOU are subject to the availability of appropriated funds, and no provision of this MOU shall be interpreted to require the obligation or payment of funds. This MOU does not constitute a financial obligation or serve as a basis of expenditures.
- B. In the event that an activity or project is identified requiring an advance or reimbursement of appropriated funds between NASA and the DOE, a separate interagency agreement will be developed setting forth the specific statutory authority supporting the transaction and the applicable terms and conditions for the activity or project.
- C. The parties agree to reference this MOU in any supplemental agreements, amendments, or letters of agreement executed by the two parties, pursuant to the objectives of this MOU.
- D. The parties agree to reference this MOU in any separate written implementing agreements or interagency agreements entered into by the parties, pursuant to the objectives of this MOU.
- E. Appropriate patent, technical data, and other intellectual property provisions shall be included in any separate written implementing agreement or interagency agreement entered into by the parties pursuant to the objectives of this MOU. DOE intellectual property policies shall apply to any work performed by NREL that is funded by DOE.

VI. Term

This MOU becomes effective on the later date of the signatures of the parties below and shall remain in effect for a 5-year term from the effective date. This MOU may be amended or terminated by mutual written agreement of NASA and NREL or upon 90 days written notice given to the other party.

NREL MOU No. _____

By
Printed Name
Title



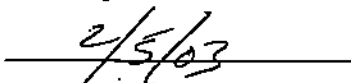
Ronald J. Birk
Director
Earth Science Applications
Division

Office of Earth Science

National Aeronautics & Space
Administration

Address 300 E. Street SW
Washington, DC 20546

Date



2/5/03

By
Printed Name
Title

Bobi Garrett
Associate Director
Planning and Technology
Management

National Renewable Energy
Laboratory

1617 Cole Boulevard
Golden, Colorado 80401

Date

MEMORANDUM OF UNDERSTANDING
Between
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Office of Earth Science, Applications Division
And
THE UNITED STATES DEPARTMENT OF AGRICULTURE
Research, Education, and Economics Division
For
COOPERATION IN EARTH SCIENCES

I. Purpose and Scope

This Memorandum of Understanding (MOU) provides a framework for cooperation between the National Aeronautics and Space Administration (NASA) and the United States Department of Agriculture (USDA) (hereinafter the Party or Parties) to facilitate science and technology research, development, transfer, utilization, and commercialization efforts in the area of Earth remote sensing.

This cooperation and coordination is not limited to the two Parties to this MOU, and each Party, independently or jointly, may cooperate with other Federal agencies and their extensions; interested State, regional and local agencies, colleges and universities; private industries, nonprofit organizations; and foundations and public interest groups. Both Parties view this MOU as important in improving the shared goals of remote sensing data acquisition, modeling, and applications in the following five areas:

- A. Carbon Management: Studies of Carbon sequestration assessment;
- B. Biological Invasive Species: Studies through environmental models;
- C. Water Management and Conservation: Studies of Water Cycle science;
- D. Agriculture Competitiveness: Increase competitiveness through use of weather/climate observation and prediction systems; and
- E. Air Quality Management: Studies of national to international atmospheric measurements and predictions.

The USDA and NASA shall handle their own activities and utilize their own resources, including the expenditure of their own funds unless otherwise agreed in specific implementing agreements, in pursuing these objectives. Each party shall carry out its separate activities, as agreed within the context of this MOU, in a coordinated and mutually beneficial manner.

Implementing agreements between NASA and USDA may be developed, pursuant to this MOU, to define specific undertakings and must be consistent with the provisions of this MOU. Such agreements may provide for the use of facilities, personnel, cooperative projects, and transfer of funds, and shall comply with the laws, regulations, and orders pertaining to the respective departments and agencies.

) This MOU is not intended to and does not create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a party against the United States, its agencies, its officers, or any person.

II. Authorities

NASA enters into this MOU, pursuant to section 203(c) of the National Aeronautics and Space Act of 1958, as amended (42 U.S.C. 2473 (c)). The USDA enters into this MOU, pursuant to section 1405 of the National Agriculture Research, Extension and Teaching Policy Act of 1977, as amended (7 U.S.C. 3121).

Nothing in this MOU alters the statutory authorities of NASA or USDA. This MOU is intended to facilitate cooperative efforts for mutual provision of services and support, as well as technical assistance by both Parties in the conduct of science and technology research, development, transfer, utilization, and commercialization programs, and activities in the area of Earth remote sensing. This MOU does not supercede or void existing agreements between NASA and USDA.

III. Responsibilities

) A. Within the context of the Purpose and Scope above, NASA agrees to use reasonable efforts to fulfill the following responsibilities:

1. Support USDA science and technology research, development, transfer, utilization, and commercialization efforts within the Research, Education, and Economics Mission Area as agreed upon by providing technical expertise for performance, planning, review, or consultation in areas of mutual interest, subject to program priorities and budget constraints.
2. Assist USDA by initiating and demonstrating practical uses of NASA-sponsored observations from remote sensing systems and predictions from scientific research and modeling through the Applications Division, with the NASA Earth Sciences Enterprise.

B. Within the context of the Purpose and Scope above, USDA agrees to use reasonable efforts to fulfill the following responsibilities:

1. Support selected NASA technology research and development within the Office of Earth Science, Applications Division, as agreed upon by providing technical expertise for performance, planning, review, or consultation in areas of mutual interest, subject to program priorities and budget constraints.
2. Pursue the collaborative application of NASA Earth Science Enterprise data and scientific models in USDA agencies including, but not limited to, the Cooperative State Research Education and Extension Service, the Economic Research Service, the National Agricultural Statistics Service, the Agricultural Research Service, the Animal and Plant Health Inspection

) Service, the National Resources Conservation Service, and the Forest Service.

3. Engage in collaboration including, but not limited to, identifying specific USDA decision-support processes, assessments and systems that require predictions and observations that may be provided by NASA's Earth Science Enterprise data and remote sensing systems; identifying performance expectations/requirements for NASA inputs to any processes identified; collaborating with NASA on the evaluation, verification, and validation of results for component solutions; and collaborating with NASA in the benchmarking process to establish quantifiable improvements in system performance.

C. Within the context of the Purpose and Scope above, NASA and USDA agree to use reasonable efforts to fulfill the following responsibilities:

1. Reference this MOU in any supplemental agreements, amendments, interagency agreements, implementing agreements, or letters of agreement executed between the two Parties, pursuant to the objectives of this MOU.
2. Support the exchange of technical information – through databases, information systems, clearinghouses, conferences, and other means – on research, development, demonstration, and technology transfer opportunities.
3. Establish an interagency working group to accelerate the development, evaluation, and adoption of existing and new technologies in, but not limited to, the areas outlined in the Purpose and Scope.
4. Encourage through education and outreach, in partnership with both public and private organizations, the public awareness and access to space-based advances in agricultural and natural resources sciences.
5. Educate State cooperative extension agents and other ambassadors to the agricultural community with improved knowledge for agriculture-based applications of Earth Science research and technology.
6. Provide effective and efficient information delivery to the agriculture community to enhance understanding of innovative solutions to the applications of Carbon Management, Invasive Species, Water Management, Agricultural Competitiveness, and Air Quality.

D. All activities under or pursuant to this MOU are subject to the availability of appropriated funds, and no provision of this MOU shall be interpreted to require the obligation or payment of funds. As presently constituted, this MOU does not constitute a financial obligation. If a subsequently identified activity or project is identified requiring a transfer of funds or other obligation between NASA and the USDA, a supplemental written agreement will be executed. Such activity or project must be independently authorized by appropriate statutory authority. This MOU does not provide such authority. Negotiation, execution, and administration of each such agreement must comply with all applicable statutes and regulations.

E. Each Party agrees to assume liability for its own risks associated with activities undertaken in this agreement.

IV. Responsible Officers

The following are Responsible Officers in NASA and USDA for the agreement.

NASA:

Mr. Ronald J. Birk
Director Applications Division
Earth Science Enterprise
NASA Headquarters, Code YO
300 E Street SW
Washington, DC 20546
Telephone: (202) 358-3098

USDA:


Dr. Rodney J. Brown
Deputy Under Secretary
Research, Education, and Economics Division
United States Department of Agriculture
1400 Independence Avenue SW
Washington, DC 20250-0110
Telephone: (202) 720-8885


V. Duration

This MOU becomes effective on the date of signatures of both Parties and shall remain in effect for a 5-year term from the effective date.

VI. Termination

Either Party may terminate this MOU for any reason it deems substantial, upon a 90-day written notice to the other Party.


SEAN O'KEEFE, Administrator
National Aeronautics and Space
Administration


ANN M. VENEMAN, Secretary
United States Department of
Agriculture

May 30, 2003
Date

May 30, 2003
Date